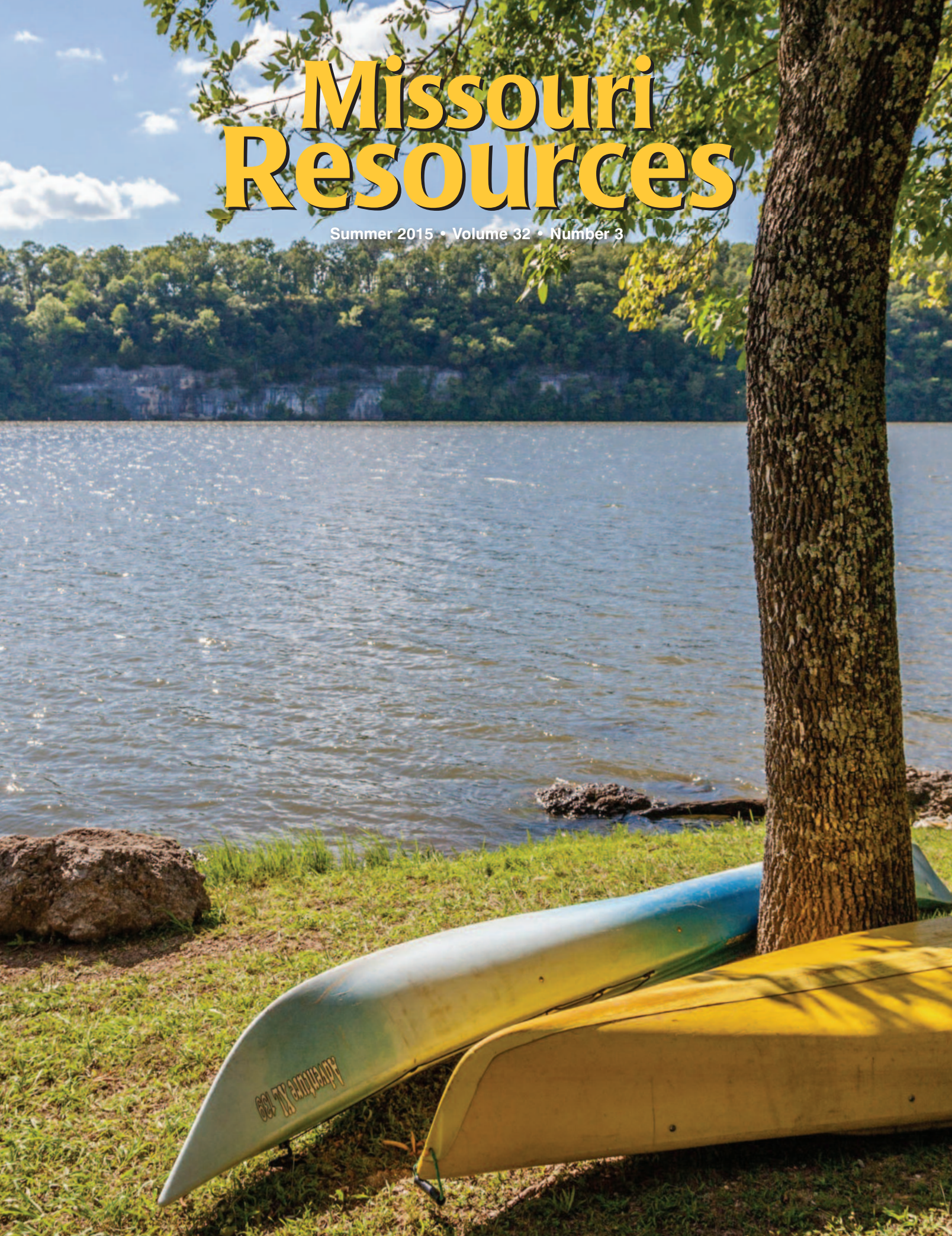


# Missouri Resources

Summer 2015 • Volume 32 • Number 3





# director's comment

Summer is upon us. Longer days provide us with opportunities to spend more time basking in the sun, working in the garden, or exploring Missouri's 87 state parks and historic sites – all time well spent outdoors while enjoying nature. I spend a number of my mornings and nights walking our two dogs along the Katy Trail State Park. Our family and friends also join us for walks on the Katy after one of our fish fries or barbecues. We are fortunate this valuable jewel within the state parks system runs adjacent to our property, providing us with numerous opportunities to enjoy its scenic and historic past.

This year marks the 25th anniversary of Katy Trail State Park. The trail offers opportunities for recreation, a place to enjoy nature and an avenue to discover the past. The Missouri River follows the 240-mile trail closely, allowing hikers and bicyclists to enjoy some of Missouri's most scenic views across the state. The vastly diverse landscapes provide breathtaking views of dense forests, wetlands, deep river valleys, remnant prairies, open pastureland and gently rolling farm fields.

In the spring, we enjoy the budding dogwood and redbud trees that glimmer against a backlit sun, casting spotlights on the trail. Our fall experience is equally rewarding with the



rich reds and oranges of the sugar maple, sumac and bittersweet trees. During the winter months, we share the magnificent view with the bald eagles that majestically soar above the trail.

I've watched as many of the small communities and businesses located along the Katy near my home have thrived, thanks to the nearly 400,000 visitors who enjoy the park every year. Read more about the park's rich history and its value to Missouri's economy in the Katy's 25th feature in this issue of Missouri Resources. A variety of special events will be held on the Katy Trail this year – learn more about these events by visiting

[mostateparks.com](http://mostateparks.com).

I hope you and your family are able to pack up the bicycles or set foot on Katy Trail State Park this year to help the department celebrate its many successes. It will be time well spent as you get outdoors and enjoy some of Missouri's most precious natural resource areas in the state.

See you on the Katy!

Sara Parker Pauley  
Missouri Department of Natural Resources

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### Mission Statement

The mission of the Missouri Department of Natural Resources is to protect our air, land and water; to preserve our unique natural and historic places; and to provide recreational and learning opportunities for everyone.

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**MISSOURI**  
DEPARTMENT OF  
NATURAL RESOURCES



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*by Leanne Tippet Mosby*

How can rural communities with declining tax bases afford to replace aging water and wastewater systems? Finally – some refreshing new options.

## 6 Missouri's Mineral Springs

*by Jerry Prewett*

From the late 1800s through early 1900s, mineral-containing springs in Missouri were all the rage. Some purported healing properties; others benefited property values.

## 10 Katy's 25th

*by Dawn Fredrickson*

The once controversial rails-to-trails project celebrates 25 years of hiking and biking success. The trail corridor's interesting history goes back nearly ten times that long.

## 14 Fishing With the Current

*by Scott Robinett*

The author's lifelong passion for fishing took a shocking turn after college. He now conducts fish tissue monitoring – no rod and reel required.

departments

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**Above:** Missouri Department of Natural Resources researchers use electrodes and a dip net to stun and collect fish on the Osage River. *DNR photo.*

**Front Cover:** Canoes rest on the water's edge at Lake of the Ozarks State Park. *DNR photo by Ben Nickelson.*

**Back Cover:** Runners compete in the trail run portion of the Adventure Challenge at Finger Lakes State Park in Boone County. *DNR photo by Ben Nickelson.*



# Water Infrastructure

## An asset for our health and our communities



by **Leanne Tippet Mosby**  
Director, Division of Environmental Quality

Anyone who has had the pleasure of traveling our rural Missouri highways and byways knows we are blessed with many small communities dotting the countryside. The cultures and economies of these communities are shaped by the state's diverse natural landscapes. From the towns and cities in the fertile flatlands of the Bootheel, to the rolling hills and homesteads in the north, to the rugged and resplendent Ozark forests – the unique character of each community is part of the rich heritage of rural Missouri. Each has its own story, and collectively these communities have helped define what it means to be a Missourian.



**Decreasing tax bases and other economic factors have led to a more challenging financial climate for many small town governments.**

**(Top center)** With assistance from the Missouri Department of Natural Resources, the City of New Haven makes wastewater system improvements.

**(Right)** Aging wastewater collection systems frequently allow stormwater from heavy rains to enter the system, causing backups and overflows. This process, known as inflow and infiltration, also puts additional strain on the system's wastewater treatment facility.

According to the Missouri Municipal League, 3.9 million Missourians, or 67 percent of the population, live in cities. There are 959 municipalities in our state, making Missouri fourth in the number of municipalities, behind Illinois, Texas and Pennsylvania. Over the decades, the demographics of rural Missouri have changed dramatically and many small communities have realized

steep declines in population. Eight hundred twenty-three Missouri towns have populations of less than 5,000. Of these, 474 have populations less than 500.

They often struggle to provide basic services such as fire and police protection, waste disposal, road maintenance, drinking water and sewers.

Recognizing these problems, the Missouri Department of Natural Resources is making small community assistance one of its top priorities. Through its Community Services efforts, the department will provide technical and planning assistance related to environmental protection within the department's responsibilities. The most common pressing needs for small communities relate to aging sewer collection systems, drinking water distribution lines and wastewater and drinking water treatment plants. This creates a challenge for communities to provide safe, clean drinking water and proper sewage treat-

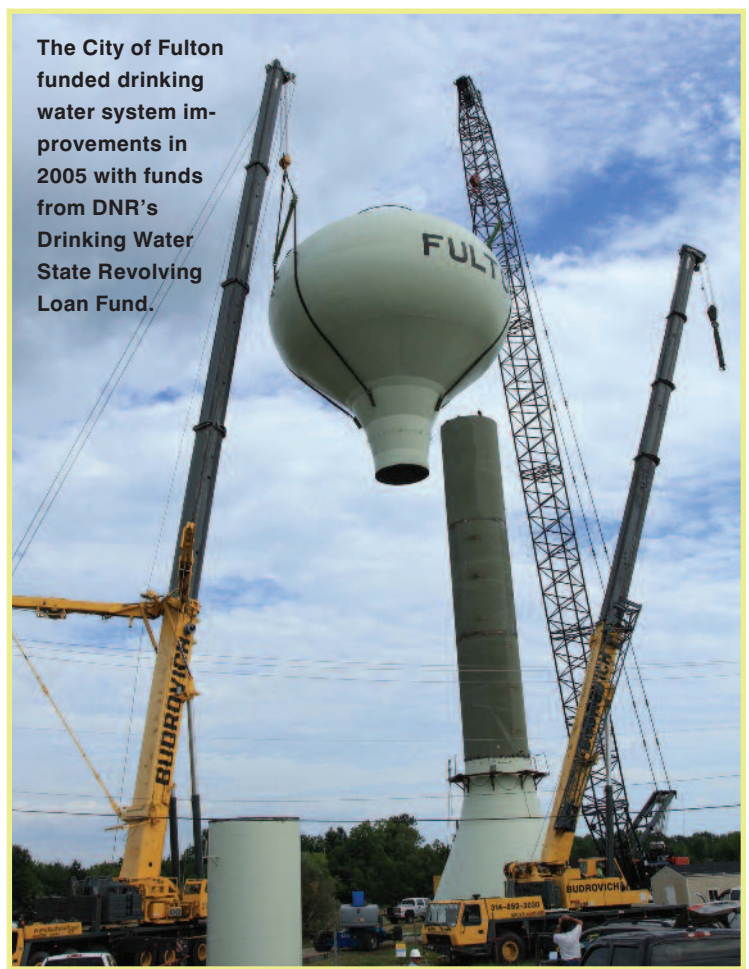


DNR file photo





DNR photo by Ben Nickelson



The City of Fulton funded drinking water system improvements in 2005 with funds from DNR's Drinking Water State Revolving Loan Fund.

DNR photo by Everett Baker

ment. Consequently, this will be a strong emphasis for the department's Community Services efforts for the foreseeable future.

**S**ewer and water main failures are in the national news for cities of all sizes. Much of the infrastructure across Missouri, designed for a 20- to 50-year lifespan, is at or near the end of its useful life. Small communities that have experienced declining populations and diminishing income face the greatest hardship to meet the costs asso-

(Bottom left) Many communities are still working with wastewater collection systems that rely on aging clay pipes, which are susceptible to breakage.

(Below) New Haven Assistant Public Works Director, David Blankenship, adjusts a valve as wastewater system updates proceed.



DNR file photo

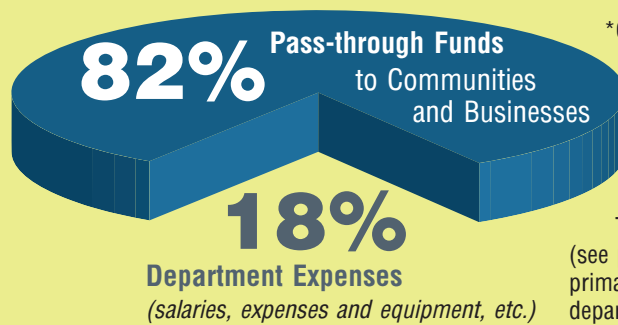


DNR photo by Ben Nickelson



# DNR Pass-through Funding\*

## Fiscal Year 2015



\*Of the department's budget, approximately 82 percent represents expenditure authority to pass through funds to communities and businesses across Missouri.

The Community Services effort (see page 2) is one of the primary focus areas identified in the department's strategic framework.

SOURCE: DNR Budget Program

To learn more about DNR's strategic planning efforts, go to [dnr.mo.gov](http://dnr.mo.gov).

with small communities. These include regional planning commissions, University of Missouri-Extension, Missouri Public Utilities Alliance, Missouri Rural Water Association, Midwest Assistance Program, Missouri Municipal League and Missouri Association of Counties, Missouri Department of Economic Development and U.S. Department of Agriculture-Rural Development. The department's Community Services will seek to build upon the successes of these organizations and others by leveraging resources and partnerships.



**The City of Monett funded drinking water system improvements in 2014 with grant and loan funds from DNR's Drinking Water State Revolving Loan Fund. This new 1-million-gallon tank holds treated drinking water ready for distribution to Monett residents.**

ciated with maintaining and improving these aging systems.

While larger cities have more technical and financial capacity to plan for infrastructure needs, many small communities simply do not have such resources readily available. By redirecting our staff resources from back-end compliance and enforcement efforts, to front-end technical and planning assistance, we hope to foster an atmosphere of consultation and cooperation with local government leaders.

There are many other organizations with resources and expertise already working

**T**he department administers several grant and loan programs to assist communities in planning and executing drinking water and wastewater infrastructure upgrades. Many of these programs have been around for decades, but often small communities lack the capacity to develop the information necessary to successfully access these programs. The department has set aside portions of its drinking water and wastewater State Revolving Fund monies to provide grants for engineering services. An engineering evaluation of infrastructure needs is the critical first step for planning.



(Below and bottom) Workers seal the interior of a new lift station wet well for the City of New Haven, in Franklin County.

DNR photo by Ben Nickelson



DNR photo by Ben Nickelson



For some communities, financial assistance may not be the answer. Towns with steep population declines may no longer have the rate base to maintain their current systems; much less afford loans for modernized upgrades. Sometimes, technological changes may help. For example, communities with wastewater lagoons may find that the least expensive option for dealing with wastewater is to move from a discharging system to land application. A low-tech, relatively easy-to-maintain wastewater treatment option, land application utilizes the power of soil microbes to break down pathogens in wastewater. This process provides beneficial soil nutrients and irrigation water to the land.

**R**egionalization is another way for small communities to reduce the technical and financial burdens of maintaining their own drinking water and wastewater systems. When communities work together to share the costs of providing these services to their customers, they benefit from reduced capital and operational costs. Communities can cooperatively provide services by physically connecting infrastructure. Even towns that can't physically connect have the opportunity to achieve efficiencies when they share the responsibilities for administrative and operational tasks for multiple, separate water or wastewater systems within a cooperating service area. The financial advantage of regionalization is there are more customers to share the burden, so each ratepayer pays a lower bill. Regionalization might be an option for a group of communities with the right geography, good local leadership and cooperative spirit.

Some communities may just need additional time to complete upgrades. In such cases, an appropriate schedule of compliance in a permit can allow for this time. For other communities, the economic impacts of completing upgrades may be so great that a variance from water quality standards may be appropriate. A variance is a legal mechanism allowing a community meeting certain criteria to forego upgrades to their wastewater infrastructure to meet water quality standards. Instead, the community would make improvements to achieve the highest quality discharge within the limits of their available financial resources.

It is clear that small communities face increasing challenges in providing services to their citizens. Often overlooked, water and sewer infrastructure are some of the most expensive assets owned and operated by a city or town, and have a significant impact on the community's health, economy and overall well-being. The circumstances in each community must be evaluated individually to determine the most appropriate solutions.

Through Community Services, the Department of Natural Resources strives to maximize its technical, financial and staff resources to help small communities meet the challenges ahead. 🐾



# MISSOURI'S MINERAL SPRINGS

by Jerry Prewett

## LAXATIVE MINERAL WATER

El Dorado Springs, Mo.

This water, unlike others, has a positive laxative effect and is an almost certain cure for Stomach Trouble, Indigestion, Liver and Kidney Affections and all Dropsical Tendencies.

### Water Will Be Shipped Anywhere

For the benefit of those who cannot come to El Dorado, this water will be shipped in five gallon demijohns to all parts of the country. First demijohn \$2.00. Refill 90c.

**E. M. MUSICK, Proprietor**

*Well Is Situated Three Blocks East of Park Hotel*

## ANALYSIS.

	Grains to the U. S. Gallon
Silic acid .....	7.70
Insoluble matter.....	0.38
Iron .....	4.45
Aluminum.....	2.07
Calcium .....	9.34
Magnesium .....	12.82
Sodium.....	31.95
Potassium.....	1.47
Chlorine.....	4.67
Sulphates .....	149.35
Total.....	224.20

Dr. Willard, Professor of Chemistry, of the Kansas State Agriculture College, who made this analysis says: "I have not found the occurrence of iron and aluminum compounds as they are in this water, to be at all common."

From our knowledge of these waters we bear cheerful testimony to their efficacy in curing a large class of diseases.

J. W. NOLAND, M. D.  
J. M. BOLLINGER, M. D.  
B. W. ROSS, OSTEOPATH.

301  
well

(Above) Water collected at El Dorado Spring, in Cedar County, in the early 1900s was bottled and sold for its mineral content.

(Right) The "Hall of Waters," in Excelsior Springs, opened in 1937 with a water bar to dispense a variety of mineral waters to visitors.

DNR photo by Ben Nickelson







DNR file photo

Missouri is blessed with one of the nation's greatest concentrations of springs. Early settlers were captivated by and capitalized on unique mineral-containing waters that flowed from certain springs and throughout the state. The outlets were referred to as mineral springs, and the liquid was known as mineral water.

Many of these mineral springs played a major role in the settlement and economic development of the state because they were believed to have calming and healing potential. Public interest in mineral springs during the latter half of the 1800s escalated, resulting in elevated property values for those who owned land boasting a mineral spring.

As part of a water resources evaluation in 1892, Paul Schweitzer, assistant state geologist with the Missouri Geological Survey, described these springs and reported some of their mineral content and potential medicinal virtues. Schweitzer reported, "The abundance and values of the mineral waters of the State are striking; nearly every county possesses its springs, whose waters have acquired a local reputation ... and destines them to become sources of relief for suffering mankind."

Interest in mineral springs took shape in the form of health and pleasure resorts. The era's modern hotels and comforts provided an opportunity to combine their version of medicinal treatment with relaxation. When used medicinally, mineral water typically was consumed or bathed in at the source.

This was referred to as "taking the cure." The term "spa" was applied to a place where the water was both consumed and used for bathing. An establishment designed only for bathing in the water was called a "bath." When patrons only consumed the water, the source was called a "well."

Twenty mineral springs were discovered in 1880 along the Fishing River in Clay County. At the time, it was believed the springs provided healing waters that would cure tuberculosis, rheumatism and other ailments, because of the water's rare combina-

**(Top) The Elms Hotel and Opera House at Excelsior Springs in Clay County, September 1890.**

**(Below) The waterworks and pump station at the Lebanon Well in Laclede County.**



DNR file photo





DNR photo by Ben Nickelson

**(Top) The “Hall of Waters” was built in an Art Deco style with Mayan influences. It was funded by the Public Works Administration.**

**(Below) Artesian wells, like the Clinton Artesian Well in Henry County, flow to the surface naturally, without pumps.**

tion of iron and manganese. This unique mineral combination later received international attention at the 1893 World’s Columbian Exposition, known as the Chicago World’s Fair. This group of springs gave support to economics that spurred the rapid development of the town of Excelsior Springs. The city hosted a hotel with an opera house, large pavilions and a lavish re-

sort. All of these amenities were offered with an opportunity to drink and bathe in the mineral waters.

**T**he “Magnetic Well” and a 500-person occupancy sanatorium called the Gasconade Hotel were located in Lebanon, Laclede County. The well was drilled to a depth of 1,000 feet in 1887 by the citizens of Lebanon – quite a feat during that time.

The water from this source was believed by many to have magnetic properties that could enact healing. Iron pipes reportedly displayed magnetism when placed in the well. One famous account from Schweitzer’s evaluation explained how an ordinary pocket knife rubbed on the supply pipe would pick up a small nail, which would have been impressive to witness. The source of the magnetism was never clearly understood, but is today thought to have been a result of static electricity that charged the spinning iron pipes when the well was being drilled. The health benefit of water being subject to magnetism is currently a point of conjecture.

The mineral content of groundwater discharging at a spring is a result of minerals in the bedrock where the water had once been stored or was slowly passing through.



DNR file photo, circa 1890



**TODAY**, the state's spring water generally is of good quality, but it should be tested before drinking. Springs typically are susceptible to pollution because of their connection to surface influences. To this end, the department's Missouri Geological Survey conducts water trace studies to understand and protect this resource. Environmentally friendly dye used to perform a water trace is placed at a location where water flows underground. Springs and other potential recovery locations are monitored where the dye may resurface. Determining the path dye takes, how far it travels, how quickly it moves and what concentration of dye is recovered help determine how vulnerable groundwater may be to surface activities. Learn more at [dnr.mo.gov/magazine/docs/mr-summer-14.pdf#page=8](http://dnr.mo.gov/magazine/docs/mr-summer-14.pdf#page=8).

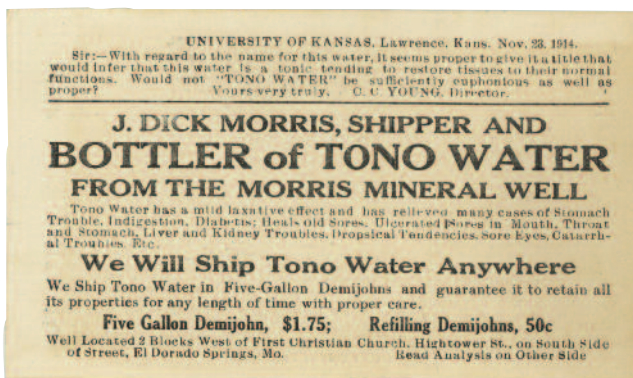


For instance, some springs in Saline, Howard and Perry counties contain appreciable quantities of residual sodium chloride, the chemical formula for common table salt. This saline or salty water is thought to be remnant of salt waters once trapped in geologic formations, and has long since been removed by past geologic processes.


**H**istorically, after the evaporation process, salt was collected and sold by local residents. Other products were collected from spring waters as commodities. Epsom salt, used as a natural exfoliant and anti-inflammation remedy to treat dry skin, sore muscles and small wounds was made from spring water high in magnesium and sulfur. Created from spring water containing sodium and sulfur, Glauber's salt was used as a mild laxative.

Other offerings provided by certain mineral springs are bicarbonates such as bicarbonates of iron, calcium, magnesium, potassium, sodium and others. Each was marketed as providing different positive effects. Some reportedly improved digestion, reduced fatigue, and inhibited the creation of kidney stones.

Many mineral springs contain minute amounts of lithium. Two springs were



named for this mineral. Lithia Spring in Jackson County was owned by the Lithia Springs Improvement Co. The spring flowed at a rate of about 250 gallons each hour. Perry County's Lithium Spring still produces a small flow on the northeast side of the town of Lithium.

Missouri's springs continue to play a huge role in our lives. Springs are places of natural beauty that transport groundwater and provide fishermen a place to fish, families a place to play and enjoy life, and water for irrigation, for domestic, public and industrial needs. Read more about Missouri springs at [dnr.mo.gov/pubs/pub656.pdf](http://dnr.mo.gov/pubs/pub656.pdf) and [dnr.mo.gov/env/wrc/springs.htm](http://dnr.mo.gov/env/wrc/springs.htm). 



**(Top) Children pose for a photograph at the Siloam Well at Excelsior Springs in Clay County.**

DNR file photo, circa 1890

**(Above) A 1914 advertisement label for mineral water collected from the Morris Mineral Well at El Dorado Springs, in Cedar County, lists many ailments it claimed to remedy.**

*Jerry Prewett is assistant state geologist and deputy director of the department's Missouri Geological Survey.*





# Katy's 25<sup>th</sup>



DNR file photo

## The trail corridor's rich history dates back to Boone, Lewis and Clark

by Dawn Fredrickson

**More than 1,000 people gathered as Gov. John Ashcroft dedicated Katy Trail State Park on April 28, 1990.**

**K**aty Trail State Park – one of the nation's longest and most successful rail-trail conversions – is celebrating 25 years in 2015. Before becoming a trail, the park was the former Missouri-Kansas-Texas (MKT) Railroad, affectionately nicknamed the “Katy” by railroad employees and passengers. The trail itself, however, is one of the more recent events in the nearly 250-year history of the corridor. A trip on the trail is an opportunity to travel through history, with frequent glimpses of Missouri's colorful past. At each trailhead and scattered along the trail are interpretive

panels that educate trail users about this rich history.

Traveling chronologically on the Katy, St. Charles (milepost 39.5) is an important first stop. St. Charles was founded in 1769 as a French fur-trading outpost and became both the launching point for explorers traveling west and the temporary seat of government for the newly formed state. Adjacent to the trail is First Missouri State Capitol State Historic Site, where guests can learn about the location that served as Missouri's first capitol from 1821 to 1826.

The Katy pays homage to several of Mis-





DNR file photo



Edward Jones archives

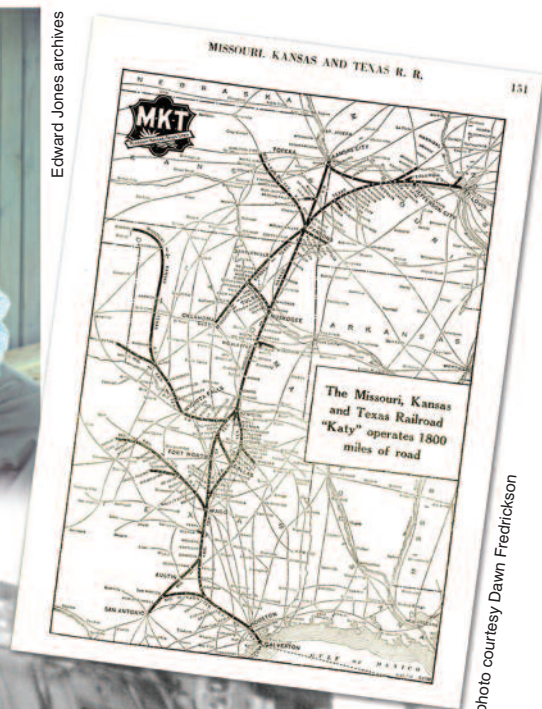
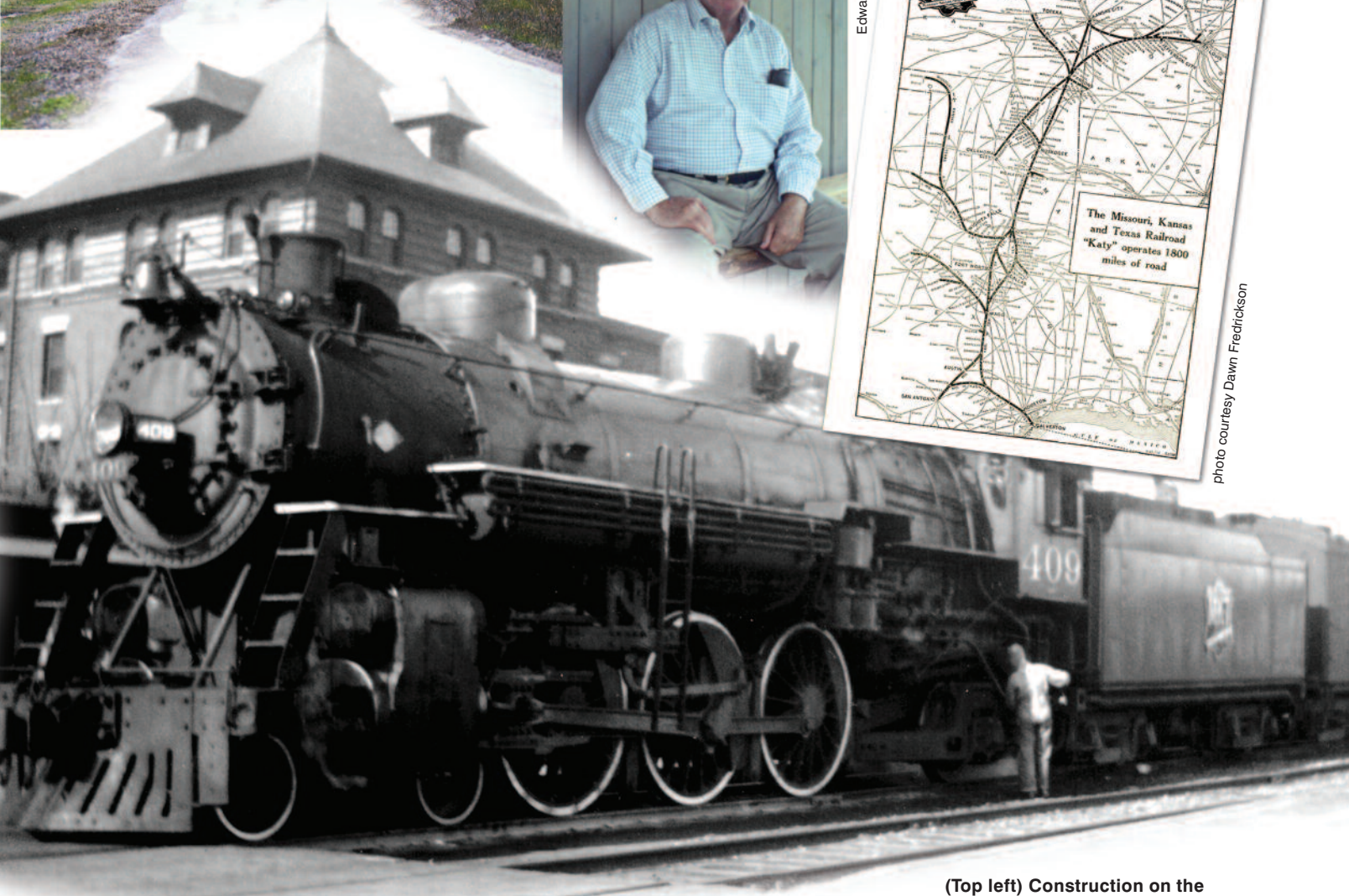


photo courtesy Dawn Fredrickson



souri's early explorers and the trails they blazed, including Daniel Boone. Already a famous frontiersman before coming to the Missouri Territory, Boone and his family settled on a Spanish land grant near Matson (milepost 60.6) in 1799. His sons Nathan and Daniel Morgan continued the Boone tradition of frontier discovery and contributed to opening up much of the territory to settlers.

**O**ther explorers include William Clark and Meriwether Lewis, commanders of the Corps of Discovery Ex-

pedition. The expedition is commemorated at more than a dozen sites along the trail between St. Charles and Boonville, a 165-mile portion of which is a part of the Lewis and Clark National Historic Trail. The Katy also travels to the birthplace of the Santa Fe Trail at New Franklin (milepost 188.2) and gives a nod to William Becknell, the pioneer who blazed the 800-mile wagon trail to Mexico in 1821-1822, and Christopher "Kit" Carson, another famous New Franklin frontiersman whose adventures were launched by the Santa Fe Trail.

**(Top left)** Construction on the Katy Trail commenced in 1987 and the first section – from Rochepot to Huntsdale – was opened in 1990.

**(Inset)** Edward D. "Ted" and Pat Jones donated \$2.2 million to acquire the MKT Railroad corridor and help convert it into the Katy Trail.

**(Top Right)** The Missouri-Kansas-Texas (MKT) Railroad ran from Parsons, Kan., to St. Louis, Mo., and south to Galveston, Tex.

**(Above)** The MKT ran continuously from the 1870s until 1986.

photo courtesy Dawn Fredrickson





DNR photo by Ben Nickelson

Another important period in the Katy's trip through time includes the mid-1800s, when German immigrants settled the lower Missouri River valley. The trail passes through the heart of "Missouri's Rhineland," so known because the river valleys reminded immigrants of Germany's Rhine Valley. Communities such as Augusta (milepost 66.3), Dutzow (milepost 74) and Rhineland (milepost 105) still retain their German heritage, including the countless vineyards and wineries that are located along the "Weinstrasse" (wine road).

Closely following this period were the turbulent years of the Civil War, which touched several Katy communities. One of the first battles of the war took place at Boonville (milepost 191.8) in 1861 while raiders from both sides of the war attacked Rocheport (milepost 178.3), including Southern guerilla "Bloody Bill" Anderson. Additionally, Clifton City (milepost 215.4) was rumored to be a place of refuge for Confederate raiders William Quantrill and brothers Frank and Jesse James.



DNR file photo

**(Top) Information depots are placed at several trailheads along Katy Trail State Park, giving visitors a peek at area history and attractions.**

**(Above) More than 100 miles of railroad ties had to be removed during the initial construction of the trail.**

While separated geographically, Portage des Sioux near Machens (milepost 26.9) and Côte Sans Dessein (milepost 134) near Tebbetts are united by their association with the War of 1812. Although the conflict had its roots in the Napoleonic Wars between Britain and France, its far-reaching impacts were felt in the Missouri Territory because of Britain's enlistment of American Indian allies to hamper the United States' expansion. The 1815 Treaties of Portage des Sioux were meant to end the hostilities between the U.S. and Britain's Indian allies, but primarily resulted in many of the tribes losing their lands. Côte Sans Dessein, an 1808 French settlement, was the site of an April 1815 battle between the settlers and Sauk and Fox tribes, fought after the 1814 Treaty of Ghent was signed.

**T**he MKT came through Missouri in the late 1800s. Traveling south to Texas, the railroad provided a vital link between the agriculture of central Missouri and the quickly developing American southwest. Looming large on the Katy's historical landscape are reminders of the trail's railroad past. Most iconic of these is the cut-stone arched tunnel in Rocheport, built in 1892-93. It is the only tunnel built on the MKT line.



The recently restored historic depot at Marthasville reflects the architecture of a rural depot, while the Sedalia depot (milepost 227.1), opened in 1896, evokes the by-gone grandeur of passenger service on the MKT. The Spanish Mission-style architecture of the 1912 Boonville depot is a reminder of the railroad's connection to the American southwest. In keeping with its railroad history, the trail's logo makes use



of the original MKT corporate logo, and its restrooms and trailhead structures mimic the railroad's architecture and traditional MKT colors, reflected in the red roof shingles, light yellowish-green siding and darker green trim.

**W**hen the railroad ceased operation in 1986, the Missouri Department of Natural Resources acquired the railroad right-of-way through a 1983 amendment to the National Trails System Act. Known as the "rail banking" amendment, it allows inactive railroad corridors to be banked for future transportation service and used as recreational trails in the interim. The MKT right-of-way was secured through a generous donation by the late Edward D. "Ted" Jones and his wife Pat. Trail construction began in 1987 and the first section opened between Rocheport and Huntsdale in 1990. The last 12 miles between St. Charles and Machens were opened in 2011, completing the 240-mile corridor from Machens to Clinton.

Today, with annual trail visitation at nearly 400,000 visitors, many of the communities that dot the trail corridor have experienced economic revitalization. Hundreds of businesses along the Katy Trail provide a variety of services, from wineries and restaurants to bike shops and bed-and-breakfast inns. A 2011 economic impact study found that Katy Trail-related expenditures made by trail users generate almost \$18.5 million annually.

Make 2015 the year you decide to explore the trail and its fascinating history, and become a part of the ongoing story yourself. For more information about Katy Trail State Park or 25th anniversary events, visit [katytrailstatepark.com](http://katytrailstatepark.com).  

*Dawn Fredrickson is the Katy Trail Coordinator for Missouri State Parks.*



DNR file photo

(Left and below) The Boonville depot is the last remaining Spanish Mission-style depot on the Katy Trail, and closed in 1986. The depot was restored and now houses the Boonville Chamber of Commerce.



DNR photo by Ben Nickelson



DNR photo by Ben Nickelson

(Left) Gov. Jay Nixon and First Lady Georganne Nixon celebrate the 25th anniversary of the Katy Trail as they kick off the Governor's 100 Missouri Miles Challenge, west of the North Jefferson (City) trailhead.



# FISHING





# WITH THE CURRENT

## Sampling Program Nets Water Quality, Fish Health Data

by Scott Robinett   DNR photos

**A**s a young boy, I watched Truman Dam being constructed near my hometown of Lincoln, Mo., and have enjoyed many days hooking crappie at Harry S Truman Reservoir.

An early passion for fishing definitely led me to pursue an education in the environmental field. I now work as an environmental specialist in the water quality monitoring section of the Department of Natural Resources' Environmental Services Program, conducting field operations for the department's fish tissue monitoring project.

The department combines the data from the fish tissue monitoring project with other data to assess the quality of Missouri's streams and lakes. The data have contributed to many streams being included on the state's list of impaired waterways due to mercury contamination.

The department also shares the data with its partner agencies such as the Missouri Department of Health and Senior Services, the Missouri Department of Conservation, the U.S. Environmental Protection Agency and the U.S. Food and Drug Administration.

From July through November, I travel the state collecting fish from a wide variety of Missouri waterways with fellow environmental specialists from the water quality monitoring section and fishing enthusiasts Dave Gullic and Brandon Baumhoer. Our team collects fish from large reservoirs like Mark Twain and Bull Shoals, as well as smaller impoundments like Bilby Ranch Lake, near Maryville.

We also sample fish from the Grand, Osage and other large rivers, as well as from streams barely large enough to float a canoe.

Researchers electrofish the Osage River to collect samples for the department's fish tissue monitoring project.



**M**ost of the fish we collect are captured using the electrofishing method, which uses specialized equipment to apply an electrical current to the water. The current temporarily paralyzes fish in relatively close proximity to the electrodes placed in the water. Depending on the electrical voltage applied by the electrofishing control box – or “shock box” – and the electrical conductivity of the water, the method can effectively stun fish within two to 10 feet of the electrodes. One team member drives the boat and adjusts settings on the shock box. With it he controls the output voltage and the pulse frequency of the direct current applied to the water, based on the fishes’ response.

The other team member is at the front of the boat capturing incapacitated fish with a

10-foot-long dip net, and placing them into a holding tank.

“It’s interesting to collect uncommon fish, whether it’s an unusual species or something very large,” Gullic explained.

Members of the public also are intrigued by electrofishing procedures.

“An electrofishing boat always draws attention and can prompt many questions,” Gullic said. “After explaining to someone what we are doing or how the system works, people often mention how they would like to ‘have one of those.’”

Of course electrofishing methods are not legal under Missouri law, except for recognized scientific monitoring or research with a special use permit issued by the Missouri Department of Conservation.

The wide variety of waterways means



Once stunned, fish are collected by team members using a 10-foot dip net and kept alive with fresh water in the boat’s holding tank.





our team encounters many different aquatic habitats. This diversity of monitoring sites can be challenging when it comes to collecting the various target species of fish. Occasionally, we go “old school” with rod and reel to capture fish when the stream or pond is not accessible by boat. Electrofishing methods also do not work well when fish are too deep or easily spooked due to very clear water conditions.

The collection process can be exciting, but the project has an important scientific purpose. After gathering the required number of fish from a site, the collection team processes the fish the same day. Depending on the goal of the monitoring, either the whole fish or edible portions of the fish are frozen until analyzed in a laboratory. Biannually, the department collects whole fish samples from 13 fixed monitoring sites. Some of these sites have been monitored since the 1970s.

**O**ur team monitors these fixed sites to observe long-term chemical contaminant trends in bottom-feeding fish like carp and suckers. The fish serve as biological samplers of contaminants like heavy metals, pesticides and polychlorinated biphenyls (PCBs) that are usually at such low levels, the water cannot be practically and accurately measured with current technology. If present in the water or sediment, however, the chemicals can accumulate in the body tissue of the fish and be measured in the lab.

Other sites are monitored for shorter periods, usually three years, for contaminants in the fillets of species that people enjoy eating, such as largemouth bass. The goal at these sites is to monitor the risk to human health from eating fish. Methyl mercury is a widespread contaminant in aquatic ecosystems that readily accumulates through the food chain into muscle tissue of predator fish like bass, walleye and catfish. Because of this bioaccumulation, bigger fish accumulate higher levels of mercury than do smaller fish of the same species.


According to the Missouri Department of Health and Senior Services, high levels of methyl mercury in fish pose a health risk to



developing fetuses and children less than 13 years of age.

While we all grew up and still enjoy fishing for recreation, having jobs that put us on the water in pursuit of the greater good is even better.

“I’ve always felt fortunate to have a career that I enjoy,” said Gullic, “and it’s very satisfying to do work that helps protect Missouri’s water quality and people’s health.”

See Fish Tissue Monitoring at [dnr.mo.gov/env/esp/fishtissue-monitoring.htm](http://dnr.mo.gov/env/esp/fishtissue-monitoring.htm), or Missouri Fish Advisory at [health.mo.gov/living/environment/fishadvisory/index.php](http://health.mo.gov/living/environment/fishadvisory/index.php) for additional information about this program. 

*Scott Robinett is an environmental specialist with the Department of Natural Resources’s Water Quality Monitoring Section.*

**(Above)** Scott Robinett adjusts the voltage on the “shock box” based on the conductivity of the water. **(Below)** David Gullic, with the department’s water quality monitoring section, collects stunned fish with a dip net.



To discover other interesting DNR career opportunities, go to [dnr.mo.gov/hr/careers.htm](http://dnr.mo.gov/hr/careers.htm).



# Floating 100 Blue Miles

by Tom Uhlenbrock

**T**he governor has added a new color to his 100 Missouri Miles Challenge – blue.

Gov. Jay Nixon and First Lady Georganne Nixon again are challenging Missourians to run, walk, bike or roll on any trail or outdoor venue for a total of at least 100 miles.

In 2015, the Nixons also want residents to join them in logging 100 blue miles by canoeing and kayaking on the state's bounty of lakes and rivers. Missouri State Parks makes that easy by offering canoe and kayak rental at several parks that are on lakes or near rivers.

Some parks also offer lessons for beginners in the Learn2Paddle program. Visit [mostateparks.com](http://mostateparks.com) to see the list of parks that have boat rentals and offer paddling courses.

Stockton and Finger Lakes state parks have set up water trails for visitors to follow in rented canoes or kayaks. Stockton, north of Springfield, has a 6.65-mile water trail that hugs the shoreline of Stockton Lake. Finger Lakes, near



DNR photo by Ben Nickelson

(Above) A Learn2Paddle participant practices paddling at Current River State Park.

(Right) Meramec State Park offers family friendly floating on a gentle stretch of the Meramec River.



DNR photo by Tom Uhlenbrock





(Left) Governor and First Lady Nixon challenge Missourians to paddle 100 blue miles in 2015. (Bottom) Visitors to Current River State Park, in Shannon County, learn the basics of kayaking in a Learn2Paddle class.

ever, many floaters have found that the best time to be on the rivers is from fall, through winter to spring. The crowds are gone, the scenery is spectacular and you can enjoy a true wilderness experience.

That gives you the full year to rack up your 100 Blue Miles.



*Tom Uhlenbrock is a writer for Missouri State Parks, a division of the Missouri Department of Natural Resources.*

Columbia, has a 4.5-mile trail marked by buoys for exploring its narrow lakes.

**M**issouri is known for its crystal-clear, spring-fed rivers, and four parks offer boat rentals for visitors to explore the Ozarks' pristine floating streams.

Sam A. Baker State Park, near Patterson in southeast Missouri, has canoe, kayak and raft rentals for floating on the lazy St. Francis River. When the water is high enough, Big Creek is a delightful little stream that runs through the park, and can be an adventurous float.

Bennett Spring State Park, a popular trout-fishing park near Lebanon, has rental canoes and kayaks for outings on the Niangua River as it leaves the park. The river can be crowded on weekends with floaters from across the state.

Montauk State Park, another trout park southwest of Salem, has springs that form the headwaters of the Current River, the state's top float stream. The river enters the Ozark National Scenic Riverways as it leaves the park. Several outfitters are located near Bennett Spring and Montauk to serve floaters. The Missouri Canoe & Floaters Association lists outfitters that are located near the parks at [missouricanoe.org](http://missouricanoe.org).

Meramec State Park has canoe, kayak and raft rentals for outings on a gentle stretch of the Meramec River that is perfect for families and beginners.

Washington State Park has boat rentals for leisurely floats on the scenic Big River, which curves around the park on its northeast boundary.

The traditional float season in Missouri begins on Memorial Day and runs through summer to Labor Day. How-



DNR photo by Ben Nickelson



## MissouriDNR Photo Contest



Don't forget to enter your photos in the department's MissouriDNR Photo Contest. Amateur photographers of all ages are encouraged to capture their favorite moments in Missouri's rich natural and cultural resources and share them for all to enjoy. The contest runs through Aug. 1, 2015. Go to [dnr.mo.gov/photocontest/](http://dnr.mo.gov/photocontest/).

Contest winners will have their winning photographs featured in the Winter 2016 issue of *Missouri Resources*. Categories include:

**Natural Resources:** this category includes photographs of Missouri's air, landscapes and waterways.

**Unique Places:** this category includes photographs taken within one of Missouri's 87 state parks and historic sites. For a list of all parks and sites, visit [mostateparks.com](http://mostateparks.com).

**People Enjoying Missouri's Water-**

**ways:** this category includes photographs of people enjoying Missouri's rivers, lakes and streams.

So, grab your camera, capture the moment and submit your entries! Thank you for helping document Missouri's resources. Good luck!

## Ha Ha Tonka State Park Ranks #4 in USA Today Poll

A *USA Today's* 10 Best Readers' Choice Poll ranked Ha Ha Tonka State Park in Camdenton as the fourth most popular state park in the country.

A panel of experts nominated 20 state parks to be considered for the 10 Best list. *USA Today* then encouraged the public to vote in March. It was promoted in *USA Today* and online at [10best.com/awards/travel/best-state-park](http://10best.com/awards/travel/best-state-park).

Located on the Lake of the Ozarks, the park features the stone ruins of a turn-of-the-20th-century castle built high atop a bluff by a prominent

Kansas City businessman. More than 15 miles of trails traverse the park, leading visitors to sinkholes, natural bridges, caves and down to the lake.

## Ashland Student Wins Slogan Contest



Lauren Parker, a fifth-grade student at Southern

Boone Elementary School in Ashland, won top honors in the Department of Natural Resources' Earth Day 2015 Slogan Contest by submitting the slogan, "Go with the Flow," based on the department's 2015 Earth Day theme, "Our Missouri Waters."

Parker was honored with a Governor's proclamation and received a \$50 gift card donated by Central Bank of Jefferson City. She also was given a rock and mineral set donated by the department's Missouri Geological Survey, headquartered in Rolla.

## Time Exposures

On Dec. 24, 1892, the Acme Lead and Zinc Co. was incorporated in Joplin, Mo., with J.C. Stewart as company president. While the business existed nearly one-half century, the company's 640 acres of property were only mined from 1904 until 1913. Acme Lead and Zinc did not perform mining operations, choosing instead to lease portions of their property to outside mining operations.

The firm's property was home to the Church-Mitchell Mine, which in 1908 produced 1,181 tons of zinc ore and more than 131 tons of lead ore – totaling \$47,806 in value. The last reported leaseholder was B.F. Rhoades & Co. in 1913.

This uncredited photo is a peek at what a lead and zinc mining site looked like circa 1910. Visible in the photo are the mill buildings and part of an above-ground mining operation in the foreground. Today, lead and zinc are produced in the Southeast Missouri Lead District known as the Viburnum Trend. Enough lead and zinc are produced in Missouri to make our state the number one producer of lead and the number two producer of zinc in the U.S.



"Riches from the Earth/MDHI Collection," Joplin Museum Complex

Send your photo to "Time Exposures," c/o Missouri Resources, PO Box 176, Jefferson City, MO 65102-0176. Original photos will be returned via insured mail. Pre-1980 environmental and natural resource photos from Missouri will be considered. Please try to include the date and location of the picture, a brief description and any related historic details that may be of interest to our readers.



Earth Day 2015 was held April 24 on the lawn of the Capitol in Jefferson City. This was the 21st annual Earth Day event sponsored by the department. More than 1,300 students attended the event, which included educational activities, contests and stage shows including the Lucky Duck Water Game, an activity that helps children learn about Missouri's precious water resources, and presentations from the World Bird Sanctuary showcasing several live birds.

Next year's celebration will be held on Friday, April 22, 2016. For more information visit the Earth Day website at [dnr.mo.gov/earthday/](http://dnr.mo.gov/earthday/).

### Abandoned Water and Oil Wells Present Hazards

Abandoned wells pose a serious physical hazard, especially to children and animals. Contaminants also can enter our groundwater through these wells. A well is considered abandoned when it can no longer be used or when it has not been in use for two years or more.

Anyone who encounters an abandoned water or oil well is encouraged to contact the Department of Natural Resources' Missouri Geological Survey by calling 573-368-2100 or by using the "Report an Environmental Concern" form. The form is available at [dnr.mo.gov/geology/geosrv/wellhd/](http://dnr.mo.gov/geology/geosrv/wellhd/). A fact sheet on plugging abandoned water wells is available at [dnr.mo.gov/pubs/pub2281.pdf](http://dnr.mo.gov/pubs/pub2281.pdf).

The department administers grant programs that offer financial assistance for the plugging of abandoned water wells. Public Drinking Water Branch grants are available to municipalities, public water supply districts and other regulated water systems. Learn more at [dnr.mo.gov/pubs/pub2443.pdf](http://dnr.mo.gov/pubs/pub2443.pdf). Soil and Water Conservation Program grants are available to private citizens. The primary funding for these cost-share practices comes from the one-tenth-of-one-percent parks, soils and water sales tax. Learn more and locate your local district office at [swcd.mo.gov](http://swcd.mo.gov).

## OUR MISSOURI WATERS

### Creative Partnerships: Connecting Communities, Science and Art

The Open Space Council for the St. Louis Region has demonstrated collaboration and local action at its best – both of which are the emphasis of the department's Our Missouri Waters efforts. Last year, the council partnered with St. Louis University, Watershed Cairns, and other regional partners in obtaining a Five Star and Urban Waters Restoration Program grant for \$25,000. The project focuses on restoring 500 miles of the Meramec, Big, Courtois, Bourbeuse and Huzzah rivers in the Lower Meramec Watershed.



Watershed Cairns photo

**Watershed cairns provide a creative reminder that our watersheds are delicate and require protection. Each cairn – such as this one, seen at the Meramec River near Route 66 State Park – has a story. Learn more about this project at [watershedcairns.com](http://watershedcairns.com).**

Each partner brings key strengths to this restoration and education project. The council's Operation Clean Stream has an impressive history of stream cleanups in the watershed; St. Louis University provides expertise in water quality assessment by analyzing years of Stream Team data from the watershed; and the Watershed Cairn exhibit brings attention to the watershed issues in a totally new, educational and artistic manner.

This creative partnership demonstrates the importance of protecting our Missouri waters and provides awareness of the problems associated with nonpoint source pollution in the Lower Meramec Watershed. Learn more at [openspacestl.org](http://openspacestl.org).



### "Paddle Stockton" at Stockton State Park

Stockton State Park will be offering canoeists and kayakers an opportunity to get together with other paddle enthusiasts and enjoy the Stockton State Park Water Trail. On the first Thursday of each month in August, September and October, paddlers can experience the 6.65-mile water trail. The event is great for those who have a canoe or kayak and want to explore the lake.

Participants should meet at the Stockton State Park Marina Water Trail

Trailhead at 9 a.m. This program is free and open to the public. Paddlers will need to provide their own equipment and personal floatation devices. For more information, contact Stockton State Park at 417-276-4259.

*For news releases on the Web, visit [dnr.mo.gov/news](http://dnr.mo.gov/news).*

*For a complete listing of the department's upcoming meetings, hearings and events, visit the department's online calendar at [dnr.mo.gov/calendar/search.do](http://dnr.mo.gov/calendar/search.do).*

*Looking for a job in natural resources? Go to [dnr.mo.gov/hr](http://dnr.mo.gov/hr).*



# TOP SPOTS TO TAKE A CAVE TOUR

**W**ith more than 6,000 known caves within its borders, it's no wonder Missouri has long been known as the "Cave State." For those wanting to explore what lies beneath the surface, Missouri State Parks includes four caves open for public tours.

Onondaga Cave and Cathedral Cave at Onondaga Cave State Park, Fisher Cave at Meramec State Park and Ozark Caverns at Lake of the Ozarks State Park are open for tours from April through October. Each cave has its individual displays of geologic wonders.

Onondaga Cave, in Crawford County, is one of America's most spectacular, with 1.5 miles of passages decorated with fantastic deposits like the Twins, the King's Canopy, the Rock of Ages, the Big Room and the delicate Lily Pad Room. Tours follow a paved walkway with a stainless steel railing, and electric lights are switched off and on to illuminate the way.

The three other caves give visitors electric lanterns during tours to lessen the disturbance on the cave creatures.

Cathedral Cave, Crawford County, is named for its most notable speleothem, which forms a thick column known as the Cathedral. Most, if not all of the cave is hollowed in the Gasconade dolomite, which was laid down approximately 440 million years ago.

From the low, narrow streamside passages to the huge rooms filled with calcite deposits, Fisher Cave, in Franklin County, offers one outstanding cave scene after another. Inside its rooms and passages are well-preserved bear claw



DNR photo by Ben Nickelson



DNR photo

**(Top)** Visitors to Onondaga Cave can view and learn about speleothems like flowstones, stalactites and stalagmites while touring the cave along a paved trail.

**(Above)** Guests at Ozark Caverns embark on a half-mile guided tour at Lake of the Ozarks State Park.

marks, cave wildlife and a vast array of calcite deposits.

In Ozark Caverns, located in Camden County, dripping and seeping water has redeposited carbonate materials in the form of "soda straws," helictites and stalagmites. The most memorable feature at Ozark Caverns is Angel's Shower, a continuous flow of water from a "showerhead" of stalactites to a crystalline basin 8 feet below.

With a year-round temperature of about 57 degrees, a cave tour is a great activity for a hot summer day. Visit [mostateparks.com](http://mostateparks.com) for pricing and additional information.



# SPICE BUSH TRAIL

## AT ROBERTSVILLE STATE PARK

The Meramec River and Calvey Creek bound Robertsville State Park and the landscape includes scenic bluffs along the river, and a patchwork of hardwood forests, rich river bottomlands and clearings that date to when the park was a working farm in the early 1900s. A great way to see the park is the .8-mile Spice Bush Trail.

The trail begins by traveling through the Meramec River's floodplain and includes slightly elevated terraces. It then travels through a nearby level woodland floor where red-headed woodpeckers frequently feed and often nest. In late April, bluebells bloom in profusion along much of this hiking trail.

Along the journey, three bridges cross a perennial stream. The trail passes through a rich bottomland area with a mixed herbaceous ground cover below tall sycamore, ash, paw-paw and black cherry trees.

The trail gets its name from the spice bush shrubs that dominate the underbrush. These aromatic plants have yellow-green flowers in the spring and turn yellow-gold in the fall.

**(Top)** Hikers cross one of three bridges that pass over a seasonal stream along the trail.

**(Far left)** The trail cuts through woodlands along the Meramec River floodplain.

**(Left)** The .8-mile loop is moderately difficult and takes about 35 minutes to complete.



Missouri State Parks – a division of the  
Missouri Department of Natural Resources

DNR photo by Ben Nickelson

DNR photos by Ben Nickelson





# Rock Matters



## barite

Missouri was once the nation's leading barite producer. Most production came from the Washington County district where barite occurs as masses in residual red clay. Some barite also was produced from small deposits in the Lake of the Ozarks region.

DNR photo by Hylan Beydler

The word barite is derived from the Greek *barus*, meaning heavy. This non-metallic mineral can be colorless, transparent to translucent, or white with light shades of blue, yellow and red. Barite is commonly stained superficially with red iron oxide. It is heavy and brittle. Historically, barite was used as a paint pigment and extender, and as filler in rubber, paper, oil cloth, textiles, linoleum, plastic and leather.

Barite mining in Missouri began around 1850, predominantly from open pits. Prior to World War I, it was mined by hand, recovering only the larger pieces. After World War I, mining by hand gave way to modern mechanized mining, making recovery of smaller pieces economical. Power shovels, dragline excavators and front-end loaders became the new methods of extraction.

Because barite is heavy, it is used as an aggregate in the preparation of heavy cement and heavy concrete, in drilling mud for high-pressure oil wells, and in the medical field. Ground barite has been used as ballast in the tires of tractors and heavy construction equipment, and to add weight to bowling balls.

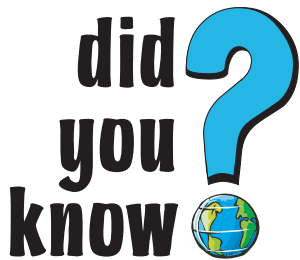
Barite is the main source of barium for the manufacture of barium-containing chemicals, including precipitated barite, which is used as a filler and extender in paint, ink,

paper, cloth and rubber. It is used in cosmetics, in ceramics, as a paint pigment, as a flux in glass making, and for barium meals in medical radiology. Barium powder mixed with water makes barium liquid that is ingested for use as an X-ray absorber that appears white on X-ray film.

Barium carbonate is used in the production of chlorine and sodium hydroxide, and in special types of glass. Barium oxide is used to remove water from organic solvents. Barium nitrate is used in fireworks and in ceramic glazes. Barium salts burn with a green color.

Barium sulfide mixed with zinc sulfate causes a chemical reaction resulting in lithopone, which serves as a white pigment. Lithopone was used extensively to make white paint, but its importance for that purpose declined greatly after the introduction of titanium dioxide pigments. In addition, Lithopone has been used in floor coverings and textiles. Barium sulfide and zinc sulfate also have been used to treat wooden artifacts to give them a marble-like finish.

Elemental barium, which is highly reactive, has been used in fuel cells, and it is added to the inside of electronic vacuum tubes as an oxygen scavenger. Barite was last mined from Missouri in 1998. Read more about barite at [dnr.mo.gov/geology/geosrv/imac/barite.htm](http://dnr.mo.gov/geology/geosrv/imac/barite.htm).



## Nearly 1 Million Plastic Bags Are Used Every Minute

Today, approximately ninety percent of grocery and shopping bags are made of plastic. We see them everywhere. We use them to carry our lunch to work, line our bathroom trash cans, and observe them fluttering from tree branches or blowing down the street with a gust of wind. According to 2012

EPA estimates, Americans generate approximately 3.8 million tons of plastic bag, sack and wrap waste annually, of which only 440,000 tons is collected for recycling. Many bags end up as litter and are destined to become among the most common form of ocean refuse, next to cigarette butts. Plastic bags that are not properly disposed of or recycled can find their way into streams and waterways and eventually end up in the ocean, where they can take up to 1,000 years to break down.

Many municipal recycling programs don't accept plastic bags in their combined recycling bins. The bags are difficult to sort and can become tangled in machinery. To properly recycle plastic bags, save and return them to the specialized recycling bins found in many of the stores that provide bags for customers. Many avoid plastic bags entirely and, instead, bring their own reusable bags. You might be thinking, "What about paper bags?" While paper bags are easier to dispose of or recycle, they also use 40 percent more energy to make and produce more hazardous emissions and water waste during manufacturing.

In the end, it's about consumption. Reducing our dependence on plastic and paper bags reduces their impact on our environment.



DNR photo by Andrew Richmond



# Cleaning Up Our Rivers: One Tire, One Barrel, at a Time

by Tom Uhlenbrock  
DNR file photos

**A**t age 17, Chad Pregracke decided that his backyard was a mess.

Pregracke grew up in East Moline, Ill.; the Mississippi River ran behind his parents' home. During summer breaks, he worked as a commercial shell diver, commercial fisherman and barge hand.

To save money, Pregracke camped on the river's islands and shorelines. He was surrounded by discarded tires, rusting refrigerators and other garbage. He wanted to do something, and he and his dog headed out on his fishing boat and began a cleanup – one tire, one barrel, at a time.

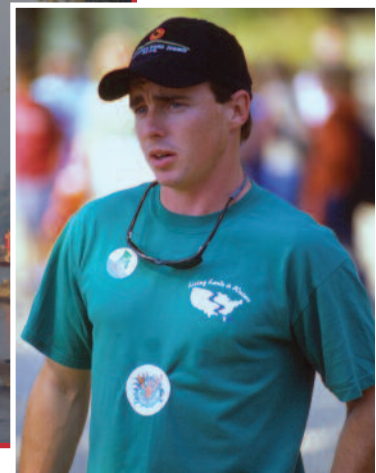
In 1998, at the age of 23, Pregracke founded Living Lands & Waters, which he calls the nation's only non-profit "industrial strength" river cleanup effort. Sixteen years later, the group estimates it has removed 7 million tons of trash from America's rivers. Pregracke and his group take stewardship of natural resources to a whole new level.

At the Governor's Conference on Natural Resources in Springfield, Mo., last November, Pregracke told the story of how he began his one-man cleanup effort, which grew to include some 70,000 dedicated volunteers and a small fleet of barges.

Looking for sponsors, Pregracke contacted businesses in his community and Alcoa gave him a grant. He estimated the money helped him pick up 30,000 pounds of trash. He was able to hire six workers and secure a second boat.



(Left) Living Lands & Waters has removed an estimated 7 million tons of trash from our nation's rivers.  
(Below) Chad Pregracke founded Living Lands & Waters in 1998, at the age of 23.



His first goal had been to work on the Mississippi, from Iowa to St. Louis. He expanded the effort to the Illinois River.

A big step came when Pregracke saw a news report about a barge of garbage wandering around New York Harbor. He realized that a barge load of garbage would help attract attention to his efforts.

A sand and gravel company donated his first barge, and the Army Corps of Engineers came up with two more. Pregracke and his barges began sponsoring community river cleanups, and the young entrepreneur was amazed that others shared his mission.

Living Lands & Waters now has sponsored 835 community cleanups with 70,000 volunteers working on 23 rivers in 20 states.

In 2013, Pregracke was named the CNN Hero of the Year.

"From St. Louis to St. Paul, real change has been made," he said. "A lot of people came together to do those little things that add up to something big. People come up to me and say, 'It is so much different than when you started.'"

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*Tom Uhlenbrock is a writer for Missouri State Parks.*



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## The Racing Series



The 2015 Missouri State Parks Racing Series will be held at state parks around Missouri. From fun walks to paddling races and aggressive treks through winding trails, there is sure to be something for all ages and skill levels. Visit [mostateparks.com/race](http://mostateparks.com/race) for more information and to register.